

SEQUENCE LISTING

<110> Gu, Wei

<120> NOVEL G-PROTEIN COUPLED RECEPTORS AND USES THEREFOR

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<150> 09/556,588

<151> 2000-05-08

<150> 60/132,896

<151> 1999-05-06

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<170> PatentIn Ver. 2.0

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cccttgggcc cgcccgggac caggaggtga gccgcgcgcg cacagctccg tgcgctcgcc 180

cgtctgagcg cccgccaggt gccccgcagc cccgcgcgcg g atg cac agc ccg cct 236

Met His Ser Pro Pro

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15

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tac cta gac ctc agt atg aac aac ctc acg gag ctt cag ccg ggt ctc Tyr Leu Asp Leu Ser Met Asn Asn Leu Thr Glu Leu Gln Pro Gly Leu	70	75	80	85	476
ttc cac cac ctg cgc ttc ctg gag gag ctg cgg ctc tca ggg aac cac Phe His His Leu Arg Phe Leu Glu Glu Leu Arg Leu Ser Gly Asn His	90	95	100		524
ctc tca cac atc ccg gga cag gca ttc tcc ggc ctc cac agc ctc aaa Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly Leu His Ser Leu Lys	105	110	115		572
att cta atg ctg cag agc aac cag ctc cgt ggg atc cca gca gag gca Ile Leu Met Leu Gln Ser Asn Gln Leu Arg Gly Ile Pro Ala Glu Ala	120	125	130		620
cta tgg gag ctg ccc agc ctg cag tcg ctg cgc cta gat gct aat ctc Leu Trp Glu Leu Pro Ser Leu Gln Ser Leu Arg Leu Asp Ala Asn Leu	135	140	145		668
atc tcc ctg gtc cct gag aga agc ttt gag ggg ctc tcc tcc ctc cgc Ile Ser Leu Val Pro Glu Arg Ser Phe Glu Gly Leu Ser Ser Leu Arg	150	155	160	165	716
cac ctc tgg ctg gat gac aat gca ctc act gag atc ccc gtc aga gct His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu Ile Pro Val Arg Ala	170	175	180		764
ctc aac aac ctt cct gcc cta cag gcc atg acc ttg gct ctc aac cat Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thr Leu Ala Leu Asn His	185	190	195		812
atc cgc cac atc cct gac tat gcc ttc cag aac ctc acc agt ctt gtg Ile Arg His Ile Pro Asp Tyr Ala Phe Gln Asn Leu Thr Ser Leu Val	200	205	210		860
gtg ctg cat cta cat aac aac cgc atc cag cat gtg ggg acc cac agc Val Leu His Leu His Asn Asn Arg Ile Gln His Val Gly Thr His Ser	215	220	225		908
ttc gag ggg ctg cac aat ctg gag aca cta gac ctg aac tat aat gag Phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp Leu Asn Tyr Asn Glu	230	235	240	245	956
ctg cag gag ttc ccc ttg gct atc cgg acc ctg ggc agg ctg cag gaa Leu Gln Glu Phe Pro Leu Ala Ile Arg Thr Leu Gly Arg Leu Gln Glu	250	255	260		1004
ttg ggt ttc cat aac aac aac atc aag gct atc cca gag aaa gcc ttc Leu Gly Phe His Asn Asn Ile Lys Ala Ile Pro Glu Lys Ala Phe	265	270	275		1052

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cag ttt gtg gga agg tca gca ttc cag tac ctg tct aaa ctg cat acg Gln Phe Val Gly Arg Ser Ala Phe Gln Tyr Leu Ser Lys Leu His Thr 295 300 305	1148
cta tct ttg aat ggt gcc act gat atc caa gag ttc cca gac ctc aaa Leu Ser Leu Asn Gly Ala Thr Asp Ile Gln Glu Phe Pro Asp Leu Lys 310 315 320 325	1196
ggc acc act agc ctg gag atc ctg acc ctg acc cgt gcg ggc atc aga Gly Thr Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg 330 335 340	1244
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Thr Glu Asp Ser Lys Pro Asn Pro Ser Val Gln Cys Ser Pro Val Pro			
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Val Leu Leu Thr Val Phe Ala Ser Gly Pro Ser Pro Leu Ser Pro Val			
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Lys Leu Val Val Gly Ala Met Ala Gly Ala Asn Ala Leu Thr Gly Ile			
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Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu Thr Tyr Gly Gln Phe			
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Leu Ala Ala Val Gln Cys Ser Ile Ser Val Thr Cys Val Arg Ala Tyr			
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Gly Lys Ala Pro Ser Pro Gly Ser Val Arg Ala Gly Ala Leu Gly Cys			
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Leu Ala Leu Ala Gly Leu Ala Ala Leu Pro Leu Ala Ser Val Gly			
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Glu Tyr Gly Ala Ser Pro Leu Cys Leu Pro Tyr Ala Pro Pro Glu Gly			
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cgg ccg gcc gcc ctg ggc ttc gct gta gcc ctg gtg atg atg aac tcg			2444
Arg Pro Ala Ala Leu Gly Phe Ala Val Ala Leu Val Met Met Asn Ser			

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cac gtg gcc tgg ctc atc ttt gca gat ggc ctc ctc tac tgc ccc gtg His Val Ala Trp Leu Ile Phe Ala Asp Gly Leu Leu Tyr Cys Pro Val 775	780	785	2588
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ata gag tct gat gga acc aag ttt ggg aac cca caa cct ccc atg aag Ile Glu Ser Asp Gly Thr Lys Phe Gly Asn Pro Gln Pro Pro Met Lys 920	925	930	3020
gga gaa ctg ctg ctg aag gca gag gga ggc act ttg gca ggc tgt ggc Gly Glu Leu Leu Leu Lys Ala Glu Gly Ala Thr Leu Ala Gly Cys Gly 935	940	945	3068
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cac ttg taaatatccc tctctgttg tcctctcccc atccaatgat ggctgcttat 3172
 His Leu

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Ser Ala Asp Cys Ser Glu Leu Gly Leu Ser Val Val Pro Ala Asp Leu
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Leu Gln Pro Gly Leu Phe His His Leu Arg Phe Leu Glu Glu Leu Arg
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Leu Ser Gly Asn His Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly
 100 105 110

Leu His Ser Leu Lys Ile Leu Met Leu Gln Ser Asn Gln Leu Arg Gly
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Ile Pro Ala Glu Ala Leu Trp Glu Leu Pro Ser Leu Gln Ser Leu Arg
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Leu Ser Ser Leu Arg His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu
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Ile Pro Val Arg Ala Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thr
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Leu Ala Leu Asn His Ile Arg His Ile Pro Asp Tyr Ala Phe Gln Asn
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Leu Thr Ser Leu Val Val Leu His Leu His Asn Asn Arg Ile Gln His
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Val Gly Thr His Ser Phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp
225 230 235 240

Leu Asn Tyr Asn Glu Leu Gln Glu Phe Pro Leu Ala Ile Arg Thr Leu
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Gly Arg Leu Gln Glu Leu Gly Phe His Asn Asn Asn Ile Lys Ala Ile
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Pro Glu Lys Ala Phe Met Gly Asn Pro Leu Leu Gln Thr Ile His Phe
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Tyr Asp Asn Pro Ile Gln Phe Val Gly Arg Ser Ala Phe Gln Tyr Leu
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Ser Lys Leu His Thr Leu Ser Leu Asn Gly Ala Thr Asp Ile Gln Glu
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Ser Leu His Arg Cys Gln Lys Leu Glu Glu Ile Gly Leu Arg His Asn
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Arg Ile Lys Glu Ile Gly Ala Asp Thr Phe Ser Gln Leu Gly Ser Leu
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Ala Phe Ser Thr Leu Arg Ser Leu Val Lys Leu Asp Leu Thr Asp Asn
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Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met His Leu
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Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln Cys Cys
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Gly Leu Leu Ala Gly Gln Ala Glu Asn His Tyr Asp Leu Asp Leu Asp
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Cys Ser Pro Val Pro Gly Pro Phe Lys Pro Cys Glu His Leu Phe Glu
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565 570 575

Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Ser Gly Pro Ser
580 585 590

Pro Leu Ser Pro Val Lys Leu Val Val Gly Ala Met Ala Gly Ala Asn
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Ala Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu
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Gly Cys Gln Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser
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Val Leu Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Ile Ser Val Thr
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Cys Val Arg Ala Tyr Gly Lys Ala Pro Ser Pro Gly Ser Val Arg Ala
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755 760 765

Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp Gly Leu
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Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val Val Leu
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Tro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe Asn Pro
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His Phe Arg Asp Asp Leu Arg Arg Leu Trp Pro Ser Pro Arg Ser Pro
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Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser Ser Cys
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Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu Ile Leu
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Glu Ala Ser Glu Ala Gly Gln Pro Pro Gly Leu Glu Thr Tyr Gly Phe
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Pro Ser Val Thr Leu Ile Ser Arg His Gln Pro Gly Ala Thr Arg Leu
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Gln Pro Pro Met Lys Gly Glu Leu Leu Leu Lys Ala Glu Gly Ala Thr
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Ala Tyr Gly Ile Cys Ala Ser Phe Phe Lys Thr Ser Gly Gln Trp Gln			
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gcc gag gac ttt cat cca gaa gaa gag gag gca cca aag agg ccc ctg 1536			
Ala Glu Asp Phe His Pro Glu Glu Ala Pro Lys Arg Pro Leu			
500	505	510	
ggc ctc ctt gct gga caa gct gag aac cac tat gac cta gac ctg gat 1584			
Gly Leu Leu Ala Gly Gln Ala Glu Asn His Tyr Asp Leu Asp Leu Asp			
515	520	525	
gag ctc cag atg ggg aca gag gac tca aag cca aac ccc agt gtc cag 1632			
Glu Leu Gln Met Gly Thr Glu Asp Ser Lys Pro Asn Pro Ser Val Gln			
530	535	540	
tgc agc cct gtt cca ggc ccc ttc aag ccc tgc gag cac ctc ttt gag 1680			
Cys Ser Pro Val Pro Gly Pro Phe Lys Pro Cys Glu His Leu Phe Glu			
545	550	555	560
agc tgg ggc atc cgc ctt gct gtg tgg gcc atc gtg ctg ctc tcc gta 1728			
Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu Ser Val			
565	570	575	
ctc tgt aac ggg ctg gtg ctg aca gtc ttt gcc agc gga ccc agc 1776			
Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Ser Gly Pro Ser			
580	585	590	
ccg ctg tcc ccc gtc aag ctt gtg gtg ggt gcg atg gca ggc gcc aac 1824			
Pro Leu Ser Pro Val Lys Leu Val Val Gly Ala Met Ala Gly Ala Asn			
595	600	605	
gcc ctg acg ggc att tcc tgt ggt ctc ctg gcc tct gtg gac gcc ttg 1872			
Ala Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu			
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Thr Tyr Gly Gln Phe Ala Glu Tyr Gly Ala Arg Trp Glu Ser Gly Leu			
625	630	635	640
ggc tgc cag gct acg ggc ttc ctg gct gtc ctg ggt tca gag gcg tcg 1968			
Gly Cys Gln Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser			
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Val Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Ile Ser Val Thr			
660	665	670	
tgc gtc cga gcc tac ggg aag gcg ccg tcg cct ggc agc gtc cgc gca 2064			
Cys Val Arg Ala Tyr Gly Lys Ala Pro Ser Pro Gly Ser Val Arg Ala			
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Gly Ala Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala Leu Pro			
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ctg gcc tcg gtg gga gag tat ggc gcc tcc cca ctc tgc ctg ccc tac 2160			
Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu Pro Tyr			

705	710	715	720	
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Ala Pro Pro Glu Gly Arg Pro Ala	Ala Ala Leu Gly Phe Ala Val	Ala Leu		
725	730	735		
gtg atg atg aac tcg ctc tgc	ttc ctg gtg gtg gcc ggc	gcc tac atc		2256
Val Met Met Asn Ser Leu Cys	Phe Leu Val Val Ala Gly	Tyr Ala Tyr Ile		
740	745	750		
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Lys Leu Tyr Cys Asp Leu Pro	Arg Gly Asp Phe Glu	Ala Val Trp Asp		
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tgc gcc atg gtg cgc cac	gtg gcc tgg ctc atc	ttt gca gat ggc ctc		2352
Cys Ala Met Val Arg His	Val Ala Trp Leu Ile	Phe Ala Asp Gly Leu		
770	775	780		
ctc tac tgc ccc gtg gcc	ttc ctc agc ttt gcc	tcc atg ctg ggc ctc		2400
Leu Tyr Cys Pro Val Ala Phe	Leu Ser Phe Ala Ser	Met Leu Gly Leu		
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ttc cct gtc acc ccc gag	gct gtc aag tca	gtc ctt ctg gtg gtg	ctg	2448
Phe Pro Val Thr Pro Glu Ala	Val Lys Ser Val Leu	Leu Val Val Leu		
805	810	815		
cct ctg cct gcc tgc	ctc aac cca	ctg ctc tac	ctg ctc ttc aac	2496
Pro Leu Pro Ala Cys Leu	Asn Pro Leu Leu	Tyr Leu Leu	Phe Asn Pro	
820	825	830		
cac ttc cgg gat gac	ctt cgg cgg	ctc tgg cca	agc cct cgg tcc	2544
His Phe Arg Asp Asp Leu	Arg Arg Leu	Trp Pro Ser	Pro Arg Ser Pro	
835	840	845		
ggg ccc cta gcc tac	gct gca	gcc ggt gag	ctg gag aag	2592
Gly Pro Leu Ala Tyr	Ala Ala	Gly Glu Leu	Glu Lys Ser Ser	
850	855	860		
gac tcc acc caa gcg	ctg gtg gct ttc	tca gat gtg	gat ctt att	2640
Asp Ser Thr Gln Ala	Leu Val Ala Phe	Ser Asp Val	Asp Leu Ile Leu	
865	870	875	880	
gaa gct tct gag	gct ggg cag	cct ctt ggg cta	gag acc tat	2688
Glu Ala Ser Glu Ala	Gly Gln Pro	Pro Gly Leu	Glu Thr Tyr Gly	
885	890	895		
cct tca gtg acc ctc	atc tcc cga	cat cag ccg	ggg gcc acc agg	2736
Pro Ser Val Thr Leu	Ile Ser Arg His	Gln Pro Gly	Ala Thr Arg Leu	
900	905	910		
gag gga aac cat ttt	ata gag tct	gat gga acc aag	ttt ggg aac cca	2784
Glu Gly Asn His Phe	Ile Glu Ser Asp	Gly Thr Lys	Phe Gly Asn Pro	
915	920	925		
caa cct ccc atg aag	gga gaa ctg	ctg aag gca	gag gga gcc act	2832
Gln Pro Pro Met Lys	Gly Glu Leu	Leu Lys Ala	Glu Gly Ala Thr	
930	935	940		

ttg gca ggc tgt ggc tct tcc gtg ggt gga gcc ctc tgg ccc tct ggc	2880
Leu Ala Gly Cys Gly Ser Ser Val Gly Gly Ala Leu Trp Pro Ser Gly	
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Ser Leu Phe Ala Ser His Leu	
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Gly Ile Pro Gly Ser Thr His Ala Ser Val Glu Arg Ser Gln Gly Leu	
20 25 30	
 agc ctg ccg gct cat cca gcc tct ctt gct gcc cta g ^c g gcc tcc aac 145	
Ser Leu Pro Ala His Pro Ala Ser Leu Ala Leu Ala Ala Ser Asn	
35 40 45	
 aca acc gca tct ggg aaa ttg gag ctn gac acc ttc agc cag ctg agc 193	
Thr Thr Ala Ser Gly Lys Leu Glu Xaa Asp Thr Phe Ser Gln Leu Ser	
50 55 60	
 tcc ctg caa gcc ctg gat ctt agc tgg aac gcc atc cg ^g tcc atc cac 241	
Ser Leu Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ser Ile His	
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 cct gag gcc ttc tcc acc ctg cac tcc ctg gtc aag ctg gac ctg aca 289	
Pro Glu Ala Phe Ser Thr Leu His Ser Leu Val Lys Leu Asp Leu Thr	
85 90 95	
 gac aac cag ctg acc aca ctg ccc ctg gct gga ctt ggg ggc ttg atg 337	
Asp Asn Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met	
100 105 110	
 cat ctg aag ctc aaa ggg aac ctt gct ctc tcc cag gcc ttc tcc aag 385	
His Leu Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys	
115 120 125	

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tgg gag gct gaa gac ctt cac ctt gat gat gag gag tct tca aaa agg Trp Glu Ala Glu Asp Leu His Leu Asp Asp Glu Glu Ser Ser Lys Arg 165 170 175	529
ccc ctg ggc ctc ctt gcc aga caa gca gag aac cac tat gac cag gac Pro Leu Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp 180 185 190	577
ctg gat gag ctc cag ctg gag atg gag gac tca aag cca cac ccc agt Leu Asp Glu Leu Gln Leu Glu Met Glu Asp Ser Lys Pro His Pro Ser 195 200 205	625
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cct gcc ccc ctg ccc ccg gtc aag ttt gtg gta ggt gcg att gca ggc Pro Ala Pro Leu Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly 260 265 270	817
gcc aac acc ttg act ggc att tcc tgt ggc ctt cta gcc tca gtc gat Ala Asn Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp 275 280 285	865
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cga gca ggg gtc cta ggc tgc ctg gca ctg gca ggg ctg gcc gca gca	1105

Arg Ala Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala			
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ctg ccc ctg gcc tca gtg gga gaa tac ggg gcc tcc cca ctc tgc ctg			1153
Leu Pro Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu			
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ccc tac gcg cca cct gag ggt cag cca gca gcc ctg ggc ttc acc gtg			1201
Pro Tyr Ala Pro Pro Glu Gly Gln Pro Ala Ala Leu Gly Phe Thr Val			
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gcc ctg gtg atg atg aac tcc ttc tgt ttc ctg gtc gtg gcc ggt gcc			1249
Ala Leu Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala			
405	410	415	
tac atc aaa ctg tac tgt gac ctg ccg cgg ggc gac ttt gag gcc gtg			1297
Tyr Ile Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val			
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tgg gac tgc gcc atg gtg agg cac gtg gcc tgg ctc atc ttc gca gac			1345
Trp Asp Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp			
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ggg ctc ctc tac tgt ccc gtg gcc ttc ctc agc ttc gcc tcc atg ctg			1393
Gly Leu Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu			
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ggc ctc ttc cct gtc acg ccc gag gcc gtc aag tct gtc ctg ctg gtg			1441
Gly Leu Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val			
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gtg ctg ccc ctg cct gcc tgc ctc aac cca ctg ctg tac ctg ctc ttc			1489
Val Leu Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe			
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Asn Pro His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly			
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Asp Ser Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser			
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Ser Cys Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu			
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att ctg gaa gct tct gaa gct ggg cgg ccc cct ggg ctg gag acc tat			1681
Ile Leu Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr			
545	550	555	560
ggc ttc ccc tca gtg acc ctc atc tcc tgt cag cag cca ggg gcc ccc			1729
Gly Phe Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro			
565	570	575	
agg ctg gag ggc agc cat tgt gta gag cca gag ggg aac cac ttt ggg			1777
Arg Leu Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly			

580	585	590	
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tct acg cca gca ggt gga ggc ttg tca ggg ggt ggc ggc ttt cag ccc Ser Thr Pro Ala Gly Gly Leu Ser Gly Gly Gly Phe Gln Pro 610	615	620	1873
tct ggc ttg gcc ttt gct tca cac gtg taaaatccc tccccattct Ser Gly Leu Ala Phe Ala Ser His Val 625	630		1920
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caaataacaac caaaactcag cagtgtgate tatagcagga tggccagta cctggctcca 2040			
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35 40 45			
Thr Thr Ala Ser Gly Lys Leu Glu Xaa Asp Thr Phe Ser Gln Leu Ser			
50 55 60			

Ser Leu Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ser Ile His
65 70 75 80

Pro Glu Ala Phe Ser Thr Leu His Ser Leu Val Lys Leu Asp Leu Thr
85 90 95

Asp Asn Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met
100 105 110

His Leu Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys
115 120 125

Asp Ser Phe Pro Lys Leu Arg Ile Leu Glu Val Pro Tyr Ala Tyr Gln
130 135 140

Cys Cys Pro Tyr Gly Met Cys Ala Ser Phe Phe Lys Ala Ser Gly Gln
145 150 155 160

Trp Glu Ala Glu Asp Leu His Leu Asp Asp Glu Glu Ser Ser Lys Arg
165 170 175

Pro Leu Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp
180 185 190

Leu Asp Glu Leu Gln Leu Glu Met Glu Asp Ser Lys Pro His Pro Ser
195 200 205

Val Gln Cys Ser Pro Thr Pro Gly Pro Phe Lys Pro Cys Glu Tyr Leu
210 215 220

Phe Glu Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu
225 230 235 240

Ser Val Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Gly Gly
245 250 255

Pro Ala Pro Leu Pro Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly
260 265 270

Ala Asn Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp
275 280 285

Ala Leu Thr Phe Gly Gln Phe Ser Glu Tyr Gly Ala Arg Trp Glu Thr
290 295 300

Gly Leu Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu
305 310 315 320

Ala Ser Val Leu Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Val Ser
325 330 335

Val Ser Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val
340 345 350

Arg Ala Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala
355 360 365

Leu Pro Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu
370 375 380

Pro Tyr Ala Pro Pro Glu Gly Gln Pro Ala Ala Leu Gly Phe Thr Val
385 390 395 400

Ala Leu Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala
405 410 415

Tyr Ile Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val
420 425 430

Trp Asp Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp
435 440 445

Gly Leu Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu
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Gly Leu Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val
465 470 475 480

Val Leu Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe
485 490 495

Asn Pro His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly
500 505 510

Asp Ser Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser
515 520 525

Ser Cys Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu
530 535 540

Ile Leu Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr
545 550 555 560

Gly Phe Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro
565 570 575

Arg Leu Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly
580 585 590

Asn Pro Gln Pro Ser Met Asp Gly Glu Leu Leu Leu Arg Ala Glu Gly
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Gly Ile Pro Gly Ser Thr His Ala Ser Val Glu Arg Ser Gln Gly Leu
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Ser Leu Pro Ala His Pro Ala Ser Leu Ala Ala Leu Ala Ser Asn
35 40 45

aca acc gca tct ggg aaa ttg gag ctn gac acc ttc agc cag ctg agc 192
Thr Thr Ala Ser Gly Lys Leu Glu Xaa Asp Thr Phe Ser Gln Leu Ser
50 55 60

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Ser Leu Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ser Ile His
65 70 75 80

cct gag gcc ttc tcc acc ctg cac tcc ctg gtc aag ctg gac ctg aca 288
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Asp Asn Gln Leu Thr Thr Leu Pro Leu Ala Gly Leu Gly Gly Leu Met
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His Leu Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys
115 120 125

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Cys Cys Pro Tyr Gly Met Cys Ala Ser Phe Phe Lys Ala Ser Gly Gln
145 150 155 160

tgg gag gct gaa gac ctt cac ctt gat gat gag gag tct tca aaa agg 528
Trp Glu Ala Glu Asp Leu His Leu Asp Asp Glu Glu Ser Ser Lys Arg
165 170 175

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Pro Leu Gly Leu Leu Ala Arg Gln Ala Glu Asn His Tyr Asp Gln Asp

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gtc cag tgt agc cct act cca ggc ccc ttc aag ccc tgt gag tac ctc Val Gln Cys Ser Pro Thr Pro Gly Pro Phe Lys Pro Cys Glu Tyr Leu 210	215	220	672
ttt gaa agc tgg ggc atc cgc ctg gcc gtg tgg gcc atc gtg ttg ctc Phe Glu Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu 225	230	235	720
tcc gtg ctc tgc aat gga ctg gtg ctg acc gtg ttc gct ggc ggg Ser Val Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Gly Gly 245	250	255	768
cct gcc ccc ctg ccc ccg gtc aag ttt gtg gta ggt gcg att gca ggc Pro Ala Pro Leu Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly 260	265	270	816
gcc aac acc ttg act ggc att tcc tgt ggc ctt cta gcc tca gtc gat Ala Asn Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp 275	280	285	864
gcc ctg acc ttt ggt cag ttc tct gag tac gga gcc cgc tgg gag acg Ala Leu Thr Phe Gly Gln Phe Ser Glu Tyr Gly Ala Arg Trp Glu Thr 290	295	300	912
ggg cta ggc tgc cgg gcc act ggc ttc ctg gca gta ctt ggg tcg gag Gly Leu Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu 305	310	315	960
gca tcg gtg ctg ctg ctc act ctg gcc gca gtg cag tgc agc gtc tcc Ala Ser Val Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Val Ser 325	330	335	1008
gtc tcc tgt gtc cgg gcc tat ggg aag tcc ccc tcc ctg ggc agc gtt Val Ser Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val 340	345	350	1056
cga gca ggg gtc cta ggc tgc ctg gca ctg gca ggg ctg gcc gcc gca Arg Ala Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala 355	360	365	1104
ctg ccc ctg gcc tca gtg gga gaa tac ggg gcc tcc cca ctc tgc ctg Leu Pro Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu 370	375	380	1152
ccc tac gcg cca cct gag ggt cag cca gca gcc ctg ggc ttc acc gtg Pro Tyr Ala Pro Pro Glu Gly Gln Pro Ala Ala Leu Gly Phe Thr Val 385	390	395	1200
gcc ctg gtg atg atg aac tcc ttc tgt ttc ctg gtc gtg gcc ggt gcc Ala Leu Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala 405	410	415	1248

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ggc ctc ttc cct gtc acg ccc gag gcc gtc aag tct gtc ctg ctg gtg Gly Leu Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val 465 470 475 480	1440
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aac ccc cac ttc cgg gat gac ctt cgg cgg ctt cgg ccc cgc gca ggg Asn Pro His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly 500 505 510	1536
gac tca ggg ccc cta gcc tat gct gcg gcc ggg gag ctg gag aag agc Asp Ser Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser 515 520 525	1584
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tct acg cca gca ggt gga ggc ttg tca ggg ggt ggc ggc ttt cag ccc Ser Thr Pro Ala Gly Gly Leu Ser Gly Gly Gly Phe Gln Pro 610 615 620	1872
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 gag ttc cct gtg gcc atc cg^g acc ctg ggc aga ctg cag gaa ctg ggg 96
 Glu Phe Pro Val Ala Ile Arg Thr Leu Gly Arg Leu Gln Glu Leu Gly
 20 25 30

 ttc cat aac aac aac atc aag gcc atc cca gaa aag gcc ttc atg ggg 14
 Phe His Asn Asn Asn Ile Lys Ala Ile Pro Glu Lys Ala Phe Met Gly
 35 40 45

 aac cct ctg cta cag acg ata cac ttt tat gat aac cca atc cag ttt 19
 Asn Pro Leu Leu Gln Thr Ile His Phe Tyr Asp Asn Pro Ile Gln Phe
 50 55 60

 gtg gga aga tcg gca ttc cag tac ctg cct aaa ctc cac aca cta tct 24
 Val Gly Arg Ser Ala Phe Gln Tyr Leu Pro Lys Leu His Thr Leu Ser
 65 70 75 80

 ctg aat ggt gcc atg gac atc cag gag ttt cca gat ctc aaa ggc acc 28
 Leu Asn Gly Ala Met Asp Ile Gln Glu Phe Pro Asp Leu Lys Gly Thr
 85 90 95

 acc agc ctg gag atc ctg acc ctg acc cgc gca ggc atc cg^g ctg ctc 33
 Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg Leu Leu
 100 105 110

 cca tcg ggg atg tgc caa cag ctg ccc agg ctc cga gtc ctg gaa ctg 38
 Pro Ser Gly Met Cys Gln Gln Leu Pro Arg Leu Arg Val Leu Glu Leu
 115 120 125

 tct cac aat caa att gag gag ctg ccc agc ctg cac agg tgt cag aaa 43
 Ser His Asn Gln Ile Glu Glu Leu Pro Ser Leu His Arg Cys Gln Lys
 130 135 140

 ttg gag gaa atc ggc ctc c^aa cac aac cgc atc tgg gaa att gga gct 48
 Leu Glu Glu Ile Gly Leu Gln His Asn Arg Ile Trp Glu Ile Gly Ala
 145 150 155 160

 gac acc ttc agc cag ctg agc tcc ctg caa gcc ctg gat ctt agc tgg 52
 Asp Thr Phe Ser Gln Leu Ser Ser Leu Gln Ala Leu Asp Leu Ser Trp
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 Asn Ala Ile Arg Ser Ile His Pro Glu Ala Phe Ser Thr Leu His Ser

180	185	190	
ctg gtc aag ctg gac ctg aca gac aac cag ctg acc aca ctg ccc ctg Leu Val Lys Leu Asp Leu Thr Asp Asn Gln Leu Thr Thr Leu Pro Leu 195	200	205	624
gct gga ctt ggg ggc ttg atg cat ctg aag ctc aaa ggg aac ctt gct Ala Gly Leu Gly Gly Leu Met His Leu Lys Leu Lys Gly Asn Leu Ala 210	215	220	672
ctc tcc cag gcc ttc tcc aag gac agt ttc cca aaa ctg agg atc ctg Leu Ser Gln Ala Phe Ser Lys Asp Ser Phe Pro Lys Leu Arg Ile Leu 225	230	235	720
gag gtg cct tat gcc tac cag tgc tgt ccc tat ggg atg tgt gcc agc Glu Val Pro Tyr Ala Tyr Gln Cys Cys Pro Tyr Gly Met Cys Ala Ser 245	250	255	768
ttc ttc aag gcc tct ggg cag tgg gag gct gaa gac ctt cac ctt gat Phe Phe Lys Ala Ser Gly Gln Trp Glu Ala Glu Asp Leu His Leu Asp 260	265	270	816
gat gag gag tct tca aaa agg ccc ctg ggc ctc ctt gcc aga caa gca Asp Glu Glu Ser Ser Lys Arg Pro Leu Gly Leu Leu Ala Arg Gln Ala 275	280	285	864
gag aac cac tat gac cag gac ctg gat gag ctc cag ctg gag atg gag Glu Asn His Tyr Asp Gln Asp Leu Asp Glu Leu Gln Leu Glu Met Glu 290	295	300	912
gac tca aag cca cac ccc agt gtc cag tgt agc cct act cca ggc ccc Asp Ser Lys Pro His Pro Ser Val Gln Cys Ser Pro Thr Pro Gly Pro 305	310	315	960
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ctg acc gtg ttc gct ggc ggg cct gcc ccc ctg ccc ccg gtc aag ttt Leu Thr Val Phe Ala Gly Gly Pro Ala Pro Leu Pro Pro Val Lys Phe 355	360	365	1104
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ggc ctt cta gcc tca gtc gat gcc ctg acc ttt ggt cag ttc tct gag Gly Leu Leu Ala Ser Val Asp Ala Leu Thr Phe Gly Gln Phe Ser Glu 385	390	395	1200
tac gga gcc cgcc tgg gag acg ggg cta ggc tgc cgg gcc act ggc ttc Tyr Gly Ala Arg Trp Glu Thr Gly Leu Gly Cys Arg Ala Thr Gly Phe 405	410	415	1248

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ctg gca ggg ctg gcc gca ctg ccc ctg gcc tca gtg gga gaa tac Leu Ala Gly Leu Ala Ala Leu Pro Leu Ala Ser Val Gly Glu Tyr 465 470 475 480	1440
ggg gcc tcc cca ctc tgc ctg ccc tac gcg cca cct gag ggt cag cca Gly Ala Ser Pro Leu Cys Leu Pro Tyr Ala Pro Pro Glu Gly Gln Pro 485 490 495	1488
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cca ctg ctg tac ctg ctc ttc aac ccc cac ttc cgg gat gac ctt ccg Pro Leu Leu Tyr Leu Leu Phe Asn Pro His Phe Arg Asp Asp Leu Arg 595 600 605	1824
cgg ctt cgg ccc cgc gca ggg gac tca ggg ccc cta gcc tat gct gcg Arg Leu Arg Pro Arg Ala Gly Asp Ser Gly Pro Leu Ala Tyr Ala Ala 610 615 620	1872
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Ala Phe Ser Asp Val Asp Leu Ile Leu Glu Ala Ser Glu Ala Gly Arg			
645	650	655	
ccc cct ggg ctg gag acc tat ggc ttc ccc tca gtg acc ctc atc tcc		2016	
Pro Pro Gly Leu Glu Thr Tyr Gly Phe Pro Ser Val Thr Leu Ile Ser			
660	665	670	
tgt cag cag cca ggg gcc ccc agg ctg gag ggc agc cat tgt gta gag		2064	
Cys Gln Gln Pro Gly Ala Pro Arg Leu Glu Gly Ser His Cys Val Glu			
675	680	685	
cca gag ggg aac cac ttt ggg aac ccc caa ccc tcc atg gat gga gaa		2112	
Pro Glu Gly Asn His Phe Gly Asn Pro Gln Pro Ser Met Asp Gly Glu			
690	695	700	
ctg ctg ctg agg gca gag gga tct acg cca gca ggt gga ggc ttg tca		2160	
Leu Leu Leu Arg Ala Glu Gly Ser Thr Pro Ala Gly Gly Leu Ser			
705	710	715	720
ggg ggt ggc ggc ttt cag ccc tct ggc ttg gcc ttt gct tca cac gt		2208	
Gly Gly Gly Phe Gln Pro Ser Gly Leu Ala Phe Ala Ser His Val			
725	730	735	
taaatatccc tccccattct tctcttcccc tctcttccct ttcctctctc cccctcggtg		2268	
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20	25	30	
Phe His Asn Asn Asn Ile Lys Ala Ile Pro Glu Lys Ala Phe Met Gly			
35	40	45	

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Val Gly Arg Ser Ala Phe Gln Tyr Leu Pro Lys Leu His Thr Leu Ser
65 70 75 80

Leu Asn Gly Ala Met Asp Ile Gln Glu Phe Pro Asp Leu Lys Gly Thr
85 90 95

Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg Leu Leu
100 105 110

Pro Ser Gly Met Cys Gln Gln Leu Pro Arg Leu Arg Val Leu Glu Leu
115 120 125

Ser His Asn Gln Ile Glu Glu Leu Pro Ser Leu His Arg Cys Gln Lys
130 135 140

Leu Glu Glu Ile Gly Leu Gln His Asn Arg Ile Trp Glu Ile Gly Ala
145 150 155 160

Asp Thr Phe Ser Gln Leu Ser Ser Leu Gln Ala Leu Asp Leu Ser Trp
165 170 175

Asn Ala Ile Arg Ser Ile His Pro Glu Ala Phe Ser Thr Leu His Ser
180 185 190

Leu Val Lys Leu Asp Leu Thr Asp Asn Gln Leu Thr Thr Leu Pro Leu
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Ala Gly Leu Gly Gly Leu Met His Leu Lys Leu Lys Gly Asn Leu Ala
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Leu Ser Gln Ala Phe Ser Lys Asp Ser Phe Pro Lys Leu Arg Ile Leu
225 230 235 240

Glu Val Pro Tyr Ala Tyr Gln Cys Cys Pro Tyr Gly Met Cys Ala Ser
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Phe Phe Lys Ala Ser Gly Gln Trp Glu Ala Glu Asp Leu His Leu Asp
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275 280 285

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Phe Lys Pro Cys Glu Tyr Leu Phe Glu Ser Trp Gly Ile Arg Leu Ala
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Val Trp Ala Ile Val Leu Leu Ser Val Leu Cys Asn Gly Leu Val Leu
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Leu Thr Val Phe Ala Gly Gly Pro Ala Pro Pro Val Lys Phe
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Val Val Gly Ala Ile Ala Gly Ala Asn Thr Leu Thr Gly Ile Ser Cys
370 375 380

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Tyr Gly Ala Arg Trp Glu Thr Gly Leu Gly Cys Arg Ala Thr Gly Phe
405 410 415

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420 425 430

Ala Val Gln Cys Ser Val Ser Cys Val Arg Ala Tyr Gly Lys
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Ser Pro Ser Leu Gly Ser Val Arg Ala Gly Val Leu Gly Cys Leu Ala
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Leu Ala Gly Leu Ala Ala Leu Pro Leu Ala Ser Val Gly Glu Tyr
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515 520 525

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Ala Trp Leu Ile Phe Ala Asp Gly Leu Leu Tyr Cys Pro Val Ala Phe
545 550 555 560

Leu Ser Phe Ala Ser Met Leu Gly Leu Phe Pro Val Thr Pro Glu Ala
565 570 575

Val Lys Ser Val Leu Leu Val Val Leu Pro Leu Pro Ala Cys Leu Asn
580 585 590

Pro Leu Leu Tyr Leu Leu Phe Asn Pro His Phe Arg Asp Asp Leu Arg
595 600 605

Arg Leu Arg Pro Arg Ala Gly Asp Ser Gly Pro Leu Ala Tyr Ala Ala
610 615 620

Ala Gly Glu Leu Glu Lys Ser Ser Cys Asp Ser Thr Gln Ala Leu Val
625 630 635 640

Ala Phe Ser Asp Val Asp Leu Ile Leu Glu Ala Ser Glu Ala Gly Arg
645 650 655

Pro Pro Gly Leu Glu Thr Tyr Gly Phe Pro Ser Val Thr Leu Ile Ser
 660 665 670

Cys Gln Gln Pro Gly Ala Pro Arg Leu Glu Gly Ser His Cys Val Glu
 675 680 685

Pro Glu Gly Asn His Phe Gly Asn Pro Gln Pro Ser Met Asp Gly Glu
 690 695 700

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Phe His Asn Asn Ile Lys Ala Ile Pro Glu Lys Ala Phe Met Gly	
35 40 45	

aac cct ctg cta cag acg ata cac ttt tat gat aac cca atc cag ttt	192
Asn Pro Leu Leu Gln Thr Ile His Phe Tyr Asp Asn Pro Ile Gln Phe	
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gtg gga aga tcg gca ttc cag tac ctg cct aaa ctc cac aca cta tct	240
Val Gly Arg Ser Ala Phe Gln Tyr Leu Pro Lys Leu His Thr Leu Ser	
65 70 75 80	

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Leu Asn Gly Ala Met Asp Ile Gln Glu Phe Pro Asp Leu Lys Gly Thr	
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acc agc ctg gag atc ctg acc ctg acc cgc gca ggc atc cggt ctg ctc	336
Thr Ser Leu Glu Ile Leu Thr Leu Thr Arg Ala Gly Ile Arg Leu Leu	
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gct gga ctt ggg ggc ttg atg cat ctg aag ctc aaa ggg aac ctt gct Ala Gly Leu Gly Gly Leu Met His Leu Lys Leu Lys Gly Asn Leu Ala 210	215	220	672
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Pro Gly Leu Arg Ala Leu Trp Leu Cys Ala Ala Leu Cys Ala Ser Arg				
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Arg Ala Gly Gly Ala Pro Gln Pro Gly Pro Gly Pro Thr Ala Cys Pro				
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Ala Pro Cys His Cys Gln Glu Asp Gly Ile Met Leu Ser Ala Asp Cys				
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tct gag ctc ggg ctg tcc gcc gtt ccg ggg gac ctg gac ccc ctg acg				307
Ser Glu Leu Gly Leu Ser Ala Val Pro Gly Asp Leu Asp Pro Leu Thr				
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gct tac ctg gac ctc agc atg aac aac ctc aca gag ctt cag cct ggc				355
Ala Tyr Leu Asp Leu Ser Met Asn Asn Leu Thr Glu Leu Gln Pro Gly				
70	75	80		
ctc ttc cac cac ctg cgc ttc ttg gag gag ctg cgt ctc tct ggg aac				403
Leu Phe His His Leu Arg Phe Leu Glu Glu Leu Arg Leu Ser Gly Asn				
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His Leu Ser His Ile Pro Gly Gln Ala Phe Ser Gly Leu Tyr Ser Leu				
105	110	115		
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Lys Ile Leu Met Leu Gln Asn Asn Gln Leu Gly Gly Ile Pro Ala Glu				
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Ala Leu Trp Glu Leu Pro Ser Leu Gln Ser Leu Arg Leu Asp Ala Asn				
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Leu Ile Ser Leu Val Pro Glu Arg Ser Phe Glu Gly Leu Ser Ser Leu				
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Arg His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu Ile Pro Val Arg				
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Arg Ile Ser His Ile Pro Asp Tyr Ala Phe Gln Asn Leu Thr Ser Leu				
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Val Val Leu His Leu His Asn Asn Arg Ile Gln His Leu Gly Thr His				
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Ser Phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp Leu Asn Tyr Asn				

230

235

240

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Ser Ala Asp Cys Ser Glu Leu Gly Leu Ser Ala Val Pro Gly Asp Leu			
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Leu Gln Pro Gly Leu Phe His His Leu Arg Phe Leu Glu Glu Leu Arg			
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Leu Asp Ala Asn Leu Ile Ser Leu Val Pro Glu Arg Ser Phe Glu Gly
145 150 155 160

Leu Ser Ser Leu Arg His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu
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Ile Pro Val Arg Ala Leu Asn Asn Leu Pro Ala Leu Gln Ala Met Thr
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Leu Ala Leu Asn Arg Ile Ser His Ile Pro Asp Tyr Ala Phe Gln Asn
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Leu Thr Ser Leu Val Val Leu His Leu His Asn Asn Arg Ile Gln His
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Leu Gly Thr His Ser Phe Glu Gly Leu His Asn Leu Glu Thr Leu Asp
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Leu Asn Tyr Asn Lys Leu Gln Glu Phe Pro Val Ala Ile Arg Thr Leu
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Gly Arg Leu Gln Glu Leu Gly Phe His Asn Asn Asn Ile Lys Ala Ile
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Pro Glu Lys Ala Phe Met Gly Asn Pro Leu Leu Gln Thr Ile His Phe
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Tyr Asp Asn Pro Ile Gln Phe Val Gly Arg Ser Ala Phe Gln Tyr Leu
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Phe Pro Asp Leu Lys Gly Thr Thr Ser Leu Glu Ile Leu Thr Leu Thr
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Ser Leu His Arg Cys Gln Lys Leu Glu Glu Ile Gly Leu Gln His Asn
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Arg Ile Trp Glu Ile Gly Ala Asp Thr Phe Ser Gln Leu Ser Ser Leu
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Gln Ala Leu Asp Leu Ser Trp Asn Ala Ile Arg Ser Ile His Pro Glu
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Lys Leu Lys Gly Asn Leu Ala Leu Ser Gln Ala Phe Ser Lys Asp Ser
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Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser
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Cys Ala Ser Arg Arg Ala Gly Gly Ala Pro Gln Pro Gly Pro Gly Pro
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Thr Ala Cys Pro Ala Pro Cys His Cys Gln Glu Asp Gly Ile Met Leu
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agc tgg ggc atc cgc ctg gcc gtg tgg gcc atc gtg ttg ctc tcc gtg Ser Trp Gly Ile Arg Leu Ala Val Trp Ala Ile Val Leu Leu Ser Val 565 570 575	1728
ctc tgc aat gga ctg gtg ctg acc gtg ttc gct ggc ggg cct gcc Leu Cys Asn Gly Leu Val Leu Leu Thr Val Phe Ala Gly Gly Pro Ala 580 585 590	1776
ccc ctg ccc ccg gtc aag ttt gtg gta ggt gcg att gca ggc gcc aac Pro Leu Pro Pro Val Lys Phe Val Val Gly Ala Ile Ala Gly Ala Asn 595 600 605	1824
acc ttg act ggc att tcc tgt ggc ctt cta gcc tca gtc gat gcc ctg Thr Leu Thr Gly Ile Ser Cys Gly Leu Leu Ala Ser Val Asp Ala Leu 610 615 620	1872
acc ttt ggt cag ttc tct gag tac gga gcc cgc tgg gag acg ggg cta Thr Phe Gly Gln Phe Ser Glu Tyr Gly Ala Arg Trp Glu Thr Gly Leu 625 630 635 640	1920
ggc tgc cgg gcc act ggc ttc ctg gca gta ctt ggg tcg gag gca tcg Gly Cys Arg Ala Thr Gly Phe Leu Ala Val Leu Gly Ser Glu Ala Ser 645 650 655	1968
gtg ctg ctg ctc act ctg gcc gca gtg cag tgc agc gtc tcc gtc tcc Val Leu Leu Leu Thr Leu Ala Ala Val Gln Cys Ser Val Ser Val Ser 660 665 670	2016
tgt gtc cgg gcc tat ggg aag tcc ccc tcc ctg ggc agc gtt cga gca	2064

Cys Val Arg Ala Tyr Gly Lys Ser Pro Ser Leu Gly Ser Val Arg Ala			
675	680	685	
ggg gtc cta ggc tgc ctg gca ctg gca ggg ctg gcc gcc gca ctg ccc			2112
Gly Val Leu Gly Cys Leu Ala Leu Ala Gly Leu Ala Ala Ala Leu Pro			
690	695	700	
ctg gcc tca gtg gga gaa tac ggg gcc tcc cca ctc tgc ctg ccc tac			2160
Leu Ala Ser Val Gly Glu Tyr Gly Ala Ser Pro Leu Cys Leu Pro Tyr			
705	710	715	720
gcg cca cct gag ggt cag cca gca gcc ctg ggc ttc acc gtg gcc ctg			2208
Ala Pro Pro Glu Gly Gln Pro Ala Ala Leu Gly Phe Thr Val Ala Leu			
725	730	735	
gtg atg atg aac tcc ttc tgt ttc ctg gtc gtg gcc ggt gcc tac atc			2256
Val Met Met Asn Ser Phe Cys Phe Leu Val Val Ala Gly Ala Tyr Ile			
740	745	750	
aaa ctg tac tgt gac ctg ccg cgg ggc gac ttt gag gcc gtg tgg gac			2304
Lys Leu Tyr Cys Asp Leu Pro Arg Gly Asp Phe Glu Ala Val Trp Asp			
755	760	765	
tgc gcc atg gtg agg cac gtg gcc tgg ctc atc ttc gca gac ggg ctc			2352
Cys Ala Met Val Arg His Val Ala Trp Leu Ile Phe Ala Asp Gly Leu			
770	775	780	
ctc tac tgt ccc gtg gcc ttc ctc agc ttc gcc tcc atg ctg ggc ctc			2400
Leu Tyr Cys Pro Val Ala Phe Leu Ser Phe Ala Ser Met Leu Gly Leu			
785	790	795	800
ttc cct gtc acg ccc gag gcc gtc aag tct gtc ctg ctg gtg gtg ctg			2448
Phe Pro Val Thr Pro Glu Ala Val Lys Ser Val Leu Leu Val Val Leu			
805	810	815	
ccc ctg cct gcc tgc ctc aac cca ctg ctg tac ctg ctc ttc aac ccc			2496
Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Leu Leu Phe Asn Pro			
820	825	830	
cac ttc cgg gat gac ctt cgg cgg ctt cgg ccc cgc gca ggg gac tca			2544
His Phe Arg Asp Asp Leu Arg Arg Leu Arg Pro Arg Ala Gly Asp Ser			
835	840	845	
ggg ccc cta gcc tat gct gcg gcc ggg gag ctg gag aag agc tcc tgt			2592
Gly Pro Leu Ala Tyr Ala Ala Gly Glu Leu Glu Lys Ser Ser Cys			
850	855	860	
gat tct acc cag gcc ctg gta gcc ttc tct gat gtg gat ctc att ctg			2640
Asp Ser Thr Gln Ala Leu Val Ala Phe Ser Asp Val Asp Leu Ile Leu			
865	870	875	880
gaa gct tct gaa gct ggg cgg ccc cct ggg ctg gag acc tat ggc ttc			2688
Glu Ala Ser Glu Ala Gly Arg Pro Pro Gly Leu Glu Thr Tyr Gly Phe			
885	890	895	
ccc tca gtg acc ctc atc tcc tgt cag cag cca ggg gcc ccc agg ctg			2736
Pro Ser Val Thr Leu Ile Ser Cys Gln Gln Pro Gly Ala Pro Arg Leu			

900

905

910

gag ggc agc cat tgt gta gag cca gag ggg aac cac ttt ggg aac ccc
Glu Gly Ser His Cys Val Glu Pro Glu Gly Asn His Phe Gly Asn Pro 2784
915 920 925

caa ccc tcc atg gat gga gaa ctg ctg ctg agg gca gag gga tct acg
Gln Pro Ser Met Asp Gly Glu Leu Leu Leu Arg Ala Glu Gly Ser Thr 2832
930 935 940

cca gca ggt gga ggc ttg tca ggg ggt ggc ggc ttt cag ccc tct ggc
Pro Ala Gly Gly Leu Ser Gly Gly Gly Phe Gln Pro Ser Gly 2880
945 950 955 960

ttg gcc ttt gct tca cac gtg
Leu Ala Phe Ala Ser His Val 2901
965